

REMARKS

Claims 1-6 are pending in the application. Applicants thank the Examiner for indicating allowance of claims 3-6.

Claim Rejections -103

Claims 1-2 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tanaka (JP 07-281032) in view of Ohkawa (6,406,158). Applicants respectfully traverse this rejection.

The present invention comprises a surface illuminant in the form of a combination of structures comprising (1) a light source, (2) a light guide plate being formed with convexes and concaves having different densities or sizes depending upon the distance from the light source, and (3) a reflection film coupled with a wavelength converting material applied on the reflective film. Claim 2, as amended, has a similar recitation as to elements (1) and (2), but requires the reflective film to comprise a light storage material incorporated in the reflective film.

Tanaka

The Examiner cites the publication to Tanaka for a teaching of the claimed invention “except for the recitation of the light guide plate being formed with convexes and concaves having different densities or sizes depending upon the distances from the light source.” The Examiner identifies elements in the display device disclosed in Tanaka, particularly as illustrated in Fig. (A), that correspond to the claimed invention. In particular, the Examiner asserts that in the disclosed display, there is a reflective “film” 15 comprising a light storage material (14).

However, as identified in the Abstract of the publication, the structure identified by number 15 is a reflective plate 15, which is operative to reflect fluorescence leaked out of the phosphor 14. Thus, Applicants submit that this is a first difference from the claimed film.

Turning now to claim 1, Applicants note that the Examiner admits that Tanaka does not teach the convexes and concaves as recited in the claim. The Examiner asserts that Ohkawa teaches such features (see Figs. 4-7). Thus, the issue is whether it would have been obvious to one skilled in the art to substitute the structure of Ohkawa into the structure of Tanaka.

The Examiner seems to assert that the light guide plate in Ohkawa would be substituted for the light conductive plate 12 in Fig. (A) of Tanaka. First, Applicants respectfully submit that the structure 12 is not contoured and that there is no teaching or suggestion for the substitution of a contoured plate from Ohkawa for the planar plate 12 of Tanaka. Second, Tanaka does not appreciate any need for a non-uniform material, particularly one that has different densities or sizes depending upon a distance from the light source. Third, the purpose of the light conductive plate in Ohkawa is different from that of Tanaka in that Tanaka simply wishes to illuminate the diffusive reflective material 13 to diffuse light leaked from the plate, with the majority of light being passed directly to the display output at 16. The structure in Ohkawa, is intended to prevent the formation of bright lines (col. 6, line 66 to col. 7, line 59) and to ensure that light is properly diffused.

Thus, Applicants respectfully submit that the Examiner's suggestion that the structure of Ohkawa can be substituted for the diffused reflective material 13 would be impractical. A second light conducting plate as suggested in Ohkawa would compete with the plate 12 illustrated in Tanaka. As such, there would be a need for two such plates with the attendant problems of interfacing such plates in an efficient and effective manner. The loss of light due to such interface would mitigate against their combination.

Alternatively, and since the Examiner's rejection is written very broadly, the Examiner may be asserting that the structure of Ohkawa would be a substitution for the combination of light conductive structure 12 and light diffusive layer 13 in Tanaka. Applicants submit that such a substitution would be inconsistent with the operation of the present invention wherein light from source 11 passes through the light conductive structure 12 and impinges on the concave/convex surface to direct light outside and away from the wavelength converting material 14 and light source material 15. By contrast, Tanaka requires that the light to impinge upon the diffusive reflective material 13 so that it does impinge upon the phosphor 14 and reflection plate 15. Thus this combination would be incompatible.

Applicants further note that according to Tanaka, the light conductive structure 12, the light diffusive layer 13, the fluorescent substrate 14, and the reflective film 15 are respectively

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structured by separate members, which however discloses neither a structure where the diffusion layer 13 is formed on the light conductive plate 12 nor a structure where the fluorescent substance layer is applied onto the reflective film 15. That is, the invention of Tanaka includes four members. Whereupon since the present invention as disclosed in Claim 1 comprises two members, i.e., the light guide plate in which regularities (convex and concaves) are formed, and the reflective film provided with the wavelength converting material, it is considered that the structure is simple and manufactured with ease.

As to claim 2, Applicants have amended this claim to recite an embodiment of the invention where the light storage material is incorporated in the reflective film. Support for this amendment can be found on page 10, lines 9 and 10 of the present specification.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Ronald Kimble
Registration No. 44,186

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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